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## Protein Power: To Build and Repair

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(ONE COMMENT)

By *Carly Hill*, registered dietitian, [Naval Medical Center San Diego](#)



It seems every other day food manufactures are promoting a new buzzword to sell their products. “Organic,” “natural,” “gluten free,” “low-fat,” the list goes on and on. It appears protein is a hot topic. I admit, I promote including protein in meals and snacks to all my patients when nutrition counseling in my office. Protein does help you feel fuller longer and therefore my patients are less likely to overeat at their next meal. But does more mean better?

According to many government organizations, the typical American consumes more protein than he or she needs. The U.S.D.A. recommends the average adult get 10 to 35 percent of his or her calories from protein. For example, a 180-pound, 6’0” man needs 72 grams of protein a day.

To put that into perspective, a cup of milk has 8 grams of protein, 3 ounces of chicken (and who really sticks with the portion size?) has 21 grams, a 6-ounce container of Greek yogurt has about 18 grams, one cup of vegetarian baked beans has 12 grams, and two large eggs have 12 grams. That alone totals 72 grams—see, it can add up rather quickly.

When it comes to athletes of all sports and just men in general, they want to know how much protein they need, when they should eat it, what’s the best kind of protein (omnivore or vegan) and if they should buy sports drinks with protein.

When it comes to protein intake, athletes seem to fall into two categories. First are those who

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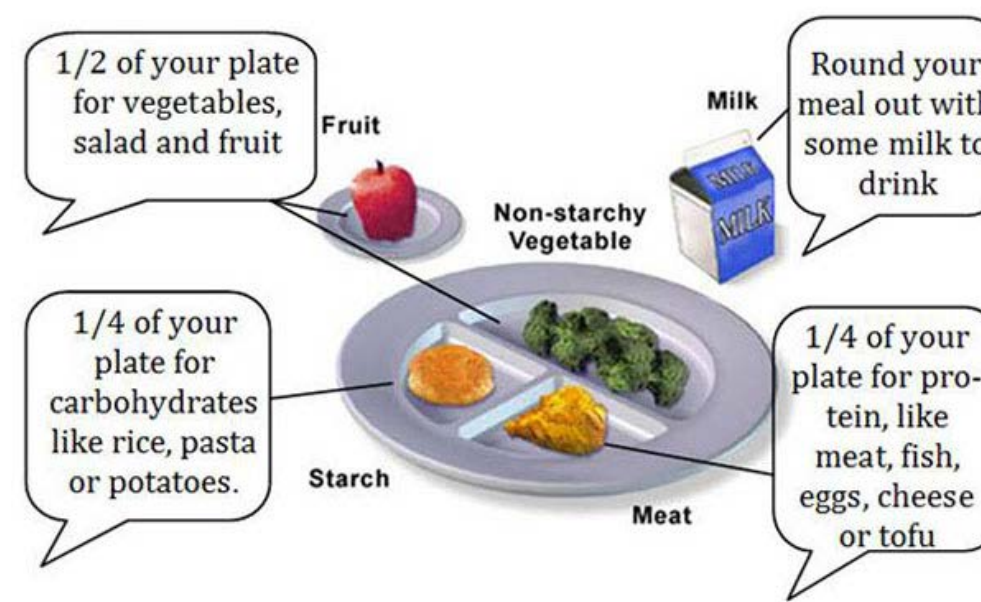
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eat too much – the bodybuilders, weightlifters, and football players who can't seem to get enough of the stuff. Those in the second group eat too little – the runners, dancers, swimmers, gymnasts, skaters, and other weight-conscious athletes who never touch meat and trade most protein calories for more salads and vegetables. Individuals in either group can perform poorly because of dietary imbalances.

While adequate protein is important in ones diet with or without sports, protein should take its place as the accompaniment to carbohydrates (whole grains, fruits, vegetables) in each meal and snack.



Why is protein important for athletes and everyone in general?

Protein is made up of chains of amino acids, some of which our bodies cannot manufacture. Protein is essential for building and maintaining muscles, as well as repairing the muscle damage that occurs during training. Protein is also needed to make red blood cells, produce hormones, boost your immune (disease-fighting) system, and help keep hair, fingernails, and skin healthy. Athletes who are protein deficient may complain about having hair that falls out easily and fingernails that grow slowly and break easily.

How much protein do regular adults and athletes need?

There isn't an exact number for athletes because protein needs vary (no one lifestyle fits all), depending on whether an athlete is growing, rapidly building new muscle, doing endurance exercise, or dieting, in which case protein is used as a source of energy (table 1). Protein requirements for athletes are higher than the current recommended dietary allowance (RDA) of 0.4 g of protein per pound of body weight, which is based on the needs of non-exercisers. Protein recommendations for athletes are commonly expressed in a range to include a safety margin<sup>1,4,6,7</sup>. If you do the math (1g of protein has 4 calories), you'll see that you don't need to have 30% of your calories come from protein.

Table 1. Recommended Grams of Protein Per Pound of Body Weight Per Day\*

|                                      |     |
|--------------------------------------|-----|
| RDA for sedentary adult <sup>1</sup> | 0.4 |
|--------------------------------------|-----|

|                     |
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|                                                                                                                                                                                                |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Adult recreational exerciser <sup>1</sup>                                                                                                                                                      | 0.5-0.75 |
| Adult competitive athlete <sup>1</sup>                                                                                                                                                         | 0.6-0.9  |
| Adult building muscle mass <sup>1</sup>                                                                                                                                                        | 0.7-0.9  |
| Dieting athlete <sup>1</sup>                                                                                                                                                                   | 0.7-1.0  |
| RDA for sedentary Vegetarian/Vegan <sup>4</sup>                                                                                                                                                | 0.4      |
| RDA Vegetarian/Vegan athlete (five or more times a week) <sup>4</sup>                                                                                                                          | 0.5-0.8  |
| *To find your daily protein requirement, multiply the appropriate numbers in this table by your weight in pounds. Total protein intake should be comprised of 10-35% for adults <sup>7</sup> . |          |

Can athletes who choose a vegetarian or vegan diet get adequate protein?

Yes. Vegetarian and vegan athletes can eat enough protein to satisfy their bodies’ needs if they wisely choose plant proteins. Lacto-ovo vegetarians (who eat eggs, milk, yogurt, cheese, and other dairy foods but no meat) can most easily consume adequate protein because these foods are excellent sources of life-sustaining protein and contain all the essential amino acids.

The limiting amino acids in cereals are lysine and threonine and methionine in legumes. Furthermore, the key for total vegetarians, or vegans (who eat no milk, eggs or other animal proteins), is to eat a variety of grains and legumes that have complementary amino acids. For example, beans and rice is an example of mixing legumes (peas and beans) with whole grains or quinoa. Also, tofu is an excellent addition to a vegetarian diet. Tofu has made headlines because it is a high-quality plant protein that contains all essential amino acids and offers the bonus of phytochemicals that protect against heart disease<sup>2</sup> and cancer<sup>3</sup>.

It should be noted that protein digestibility can affect protein requirements, especially for vegans. Factors affecting digestibility include fiber content, oxalate and polyphenolic compounds present in food as well as processing conditions<sup>5</sup>. Vegetarians who consume certain types of cereals and legumes as their primary source of plant protein may have protein needs that are higher than the Recommended Dietary Allowances (RDA), as these protein sources are digested less efficiently<sup>6</sup>. A 25% increase in protein intake is optional for some vegans who rely mainly on beans or other foods with low digestibility<sup>5</sup>. This would increase the RDA from 0.4gm per pound to 0.5 per pound for certain individuals and lead to a diet that derives approximately 10% of calories from proteins<sup>5</sup>.

Vegetarians can get ample protein from a variety of sources. Those following lacto-vegetarian or lacto-ovo-vegetarian meal plans can include low-fat dairy products and eggs to help meet protein needs. In addition to these sources, plant sources include the following:

- Legumes, including soy products (tempeh, miso, edamame, tofu)
- Grains (bulgur, brown rice, whole grain pasta)
- Nuts and nut butters (almonds, cashews, brazil nuts)
- Seeds and seed butters (quinoa, millet, sunflower)
- Vegetables (spinach, broccoli, spirulina, fungi-mushrooms)

In general, vegetarians and vegans should monitor micronutrients: Iron, Iodine, Calcium,

Vitamin D, Magnesium, B12, Riboflavin, and Zinc within their diets due to low bioavailability of plant sources vs. animal sources, unbalanced meals, and other inhibitors such as phytic acid, polyphenols/tannins, and oxalates 6,7,8,9 . A word of caution: Although vegetarian and vegan athletes and non-athletes can consume adequate protein from their diet, they have to be willing to eat large amounts of plant proteins. If you are eating a vegetarian diet that consists primarily of grains, fruits, and vegetables, you are probably eating an unbalanced diet. You might want to consult with a dietitian who can help you add the right amount of protein.

**Are protein supplements effective to get adequate protein and build muscle?**

Protein supplements often are advertised as an effective way to build muscle and increase strength. Whey protein always has been a popular choice because of its high biological value—equivalent to egg protein<sup>9</sup>. Studies show that whey protein supplements boost muscle mass and are superior to casein and soy protein. In studies comparing whey protein with casein or soy protein, whey supplementation led to greater increases in lean mass, larger reductions in fat mass and better improvements in strength<sup>9</sup>. Whey protein seems to be safe for healthy athletes who don't have hidden or known kidney or liver disease<sup>9</sup>. However, intakes that exceed 1.14gm per pound of body weight put athletes and many non-athletes at risk of dehydration, low carbohydrate intake, excessive energy intake, and increased secretion of urinary calcium<sup>9</sup>. Consumers should take note that they tend to be more expensive than eating solid foods such as chicken breast. The biggest advantage of protein supplements is not that they can build more muscle than any other whole food protein, the principal advantage, is convenience.

**Bottom line:** Yes, protein is important, but so are many other nutrients as well. Therefore, eat the rainbow in color; add moderation, variety, and a balance of food groups to your diet for repair, maintenance, and longevity.

*Carly Hill, RD, is a practicing clinical dietitian working for Navy Medicine in one of Americas finest city-San Diego, Ca. She works primarily with the Pediatric population (0-20 year olds) as well as adults with different disease states effecting nutrition status. She conducts weekly weight management and biweekly Cancer 101 classes.*

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Melody Thurman

This article was very well written. The military people are extremely lucky to have Carly Hill as their nutritionist as she is very caring, compassionate and well educated person.

